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ABSTRACT

The relationship between student scores on standardized achievement tests taken in the eighth grade and the Ohio Ninth Grade Proficiency Test (ONGPT) was studied to determine whether standardized achievement test cut-off scores can be used in place of the ONGPT. Students enrolled in the eighth grade in an urban school district in the spring of 1989 for whom achievement test scores were available and who were still enrolled in the district in January of 1992 (N=1,058 students) were divided into groups by subject based on their eighth-grade reading, language, and mathematics achievement test scores. The number who passed, failed, or did not take the ONGPT was recorded for each stanine group and for each time students retaken subtests they had failed. Mathematics achievement test scores were associated with mathematics ONGPT scores; and the citizenship ONGPT (perhaps more of a logic and reading test) was highly correlated with the reading, language, and mathematics achievement tests. There was low correlation between the writing ONGPT and the reading and language achievement tests. Other concerns within the ONGPT were the relatively greater difficulty of the mathematics ONGPT than the reading ONGPT, and the problems with holistic scoring of the writing ONGPT. Relationships between the standardized achievement tests and the ONGPTs were not strong enough to substitute the standardized tests for the ONGPTs, but standardized test scores can help identify students who need additional preparation for the ONGPT. Ten tables present study data and correlations. (SLD)

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STATE PROFICIENCY TESTS AND STANDARDIZED TESTS

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Introduction

As of July 1, 1993, every Ohio student must successfully complete a test demonstrating at least a ninth grade proficiency level in four subject areas in order to earn a high school diploma. Students who do not pass all four subtests will receive a certificate of attendance rather than a high school diploma.

Students enrolled in ninth grade during the 1990-1991 school year were the first group required to take the test since they are expected to graduate after the July 1, 1993 deadline. The subtests in reading, writing, mathematics and citizenship are administered in November and March beginning with the 1990-1991 school year. Once a student passes a subtest, she need not retake that subtest. If necessary, a student will have at least eight opportunities to take any or all subtests, one in each semester of high school, until all subtests are passed.

The proficiency testing program is costly in instructional time. It requires portions of eight days for testing and portions of 20 possible make-up days. The state also requires a standardized testing program in grades 4, 6, 8 and 10.¹ Standardized testing requires five school days and ten additional days as make-up days. Students also take teacher-made tests, competency program tests and guidance program tests. In response to the accusation of too much testing, the question is asked: Is this additional testing providing unique information or information redundant with that provided by the testing program already in place?

The purpose of this paper is to examine the relationship between student scores on standardized achievement tests taken in the eighth grade and the Ohio Ninth Grade Proficiency Test. Specifically, could standardized achievement test cut-off scores be used in place of the proficiency test?

Method

Students in an urban district were divided into stanine groups by subject based upon their 8th grade reading, language and mathematics achievement test scores. The number of students who passed, failed or did not take the proficiency test was recorded for each stanine group. The process was repeated each of the two times the students had the opportunity to retake proficiency subtests that they had failed.

Reading and language achievement stanine scores were matched to pass/fail on the reading and writing proficiency subtests and mathematics achievement stanine scores were matched to pass/fail on the mathematics proficiency subtest. See Table 1. It was judged that vocabulary and comprehension skills subsumed under reading were closely related to some parts of the citizenship subtest and to the problem-solving portion of the mathematics proficiency subtest so reading stanines were also matched to pass/fail

¹ The school district administers the California Achievement Test, copyright 1985, to all students in grades 1 through 11.

for the mathematics and citizenship subtests. Correlations between each achievement test and subtest and the proficiency subtests were computed.

Table 1. EIGHTH GRADE ACHIEVEMENT TESTS MATCHED TO OHIO PROFICIENCY SUBTESTS

Achievement test	Ohio Proficiency Subtest
Reading	Reading, writing, mathematics, citizenship
Language	Reading, writing
Mathematics	Mathematics

Results

The analyses are based upon the scores of students enrolled in the eighth grade in the spring of 1989 for whom achievement test scores were available, and who were still enrolled in the district in January, 1992. The sample consisted of 1058 students who met these criteria. These students took the proficiency test for the first time in November, 1990. Those who did not pass one or more subtests have had the opportunity to retake any or all subtests in March, 1991 and November, 1991. (Results of the March, 1992 testing are not yet available.)

First testing session

At the initial testing, passing rates for the four proficiency subtests were reading, 65.3%; writing, 59.5%; citizenship, 29.0%; mathematics, 19.2%. Less than 11% of the students passed all four subtests at the initial testing.

Table 2 shows reading, writing, mathematics and citizenship proficiency test results for students in each reading stanine; reading and writing proficiency test results for students in each language stanine; mathematics proficiency test results for students in each mathematics stanine. As reading achievement stanine scores increased, so did passing rates for all four proficiency subtests. As language and mathematics stanine scores increased, their corresponding proficiency passing rates also increased.

An interesting pattern emerges if Table 2 results are collapsed into 3 groups based on reading achievement scores: I (stanines 1-3), II (stanines 4-6), and III (stanines 7-9). See Table 3. Twenty-five percent of Group I students pass reading and nearly 40% pass writing. The results are noticeably different for the other two subtests: slightly over 3% of Group I students pass citizenship and fewer than 2% pass

mathematics. When Groups I and II are combined, 61% of the students pass reading and 56% pass writing, but only 21% pass citizenship and only 9% pass mathematics.

When Table 2 results are collapsed into groups based upon language stanines, the reading and writing proficiency pass rates for Group I and the combined Group I and II are similar to those based upon reading stanine.

Group I results based upon mathematics stanine indicate that students who are

Table 2. EIGHTH GRADE ACHIEVEMENT TESTS AS INDICATORS OF SUCCESS ON OHIO PROFICIENCY SUBTESTS AFTER ONE PROFICIENCY TESTING SESSION

Achievement Test		Ohio Proficiency Subtest			
	Stanine	Reading % pass	Writing % pass	Mathematics % pass	Citizenship % pass
Reading	1	14.3	41.7	0.0	0.0
	2	19.6	27.3	0.0	0.0
	3	27.8	43.8	2.1	4.3
	4	59.1	54.1	6.0	11.7
	5	79.3	65.8	15.7	24.4
	6	94.5	73.5	35.4	62.8
	7	96.9	74.6	56.3	78.1
	8	100.0	88.2	88.2	100.0
	9	100.0	95.0	100.0	100.0
Language	1	16.7	40.0		
	2	9.2	23.0		
	3	30.8	40.3		
	4	65.3	52.0		
	5	80.6	70.2		
	6	92.7	76.1		
	7	98.4	88.9		
	8	100.0	92.1		
	9	100.0	100.0		
Mathematics	1			0.0	
	2			0.0	
	3			3.3	
	4			3.5	
	5			10.3	
	6			39.8	
	7			76.8	
	8			86.7	
	9			100.0	

low scorers on their math achievement tests are not likely to pass the mathematics proficiency test. Low scorers on the reading and language achievement tests are much more likely to pass the reading and writing proficiency test.

Table 3. EIGHTH GRADE ACHIEVEMENT TEST STANINE GROUPS AS INDICATORS OF SUCCESS ON OHIO PROFICIENCY SUBTESTS AFTER ONE PROFICIENCY TESTING SESSION.

Groups based on reading stanine

Proficiency Subtest	Ohio Proficiency Subtest Pass Rate (%)		
	Group I*	Group II*	Group III*
Reading	25.3	74.7	98.3
Writing	39.9	62.8	82.1
Mathematics	1.6	16.4	72.9
Citizenship	3.2	28.3	88.1

Groups based on language stanine

Proficiency Subtest	Ohio Proficiency Subtest Pass Rate (%)		
	Group I*	Group II*	Group III*
Reading	25.5	76.5	99.1
Writing	36.4	63.6	91.4

Groups based on mathematics stanine

Proficiency Subtest	Ohio Proficiency Subtest Pass Rate (%)		
	Group I*	Group II*	Group III*
Mathematics	2.4	12.8	83.3

* Group I=Achievement Test Stanines 1, 2, 3
 Group II=Achievement Test Stanines 4, 5, 6
 Group III=Achievement Test Stanines 7, 8, 9

Second testing session

The majority of students who failed one or more proficiency subtests in November, 1990 were retested during the second testing session in March, 1991. Students who passed a subtest on either the first or second attempt were considered to have passed that subtest.

After the second testing, passing rates for the four proficiency subtests were reading, 76.7%; writing, 65.3%; citizenship, 44.9%; mathematics, 26.3%. Less than 19% of the students passed all four subtests after two attempts.

Table 4 shows reading, writing, mathematics and citizenship proficiency test results after the second testing session for students in each reading stanine; reading and writing proficiency test results for students in each language stanine; mathematics proficiency test results for students in each mathematics stanine. As with the first testing session, students in the lower reading stanines were somewhat successful in reading and writing, however, they still had great difficulty with mathematics and citizenship. Students in the upper reading stanines are less successful in writing and mathematics than they are in reading and citizenship.

Table 4 results were collapsed into 3 groups based on reading achievement scores: I (stanines 1-3), II (stanines 4-6), and III (stanines 7-9). See Table 5. Forty percent of Group I students pass reading and 44% pass writing. The results are noticeably different for the other two subtests: fewer than 13% of Group I students pass citizenship and slightly more than 4% pass mathematics. When Groups I and II are combined, 73.9% of the students pass reading and 62.6% pass writing, but only 38.3% pass citizenship and only 19.2% pass mathematics.

When results are collapsed into groups based upon language stanines, the reading and writing proficiency pass rates for Group I and the combined Group I and II are similar to those based upon reading stanines. After two test sessions, Group I results for mathematics remain lower than Group I results for the other subtests.

The greatest increases in passing rate were found on the citizenship subtest for students in reading stanines 5, 6 and 7, and on the reading subtest for students in Group I based on language stanines and in reading stanine 3 and 4.

Table 4. EIGHTH GRADE ACHIEVEMENT TESTS AS INDICATORS OF SUCCESS ON OHIO PROFICIENCY SUBTESTS AFTER TWO PROFICIENCY TESTING SESSIONS

Achievement Test		Ohio Proficiency Subtest			
	Stanine	Reading % pass	Writing % pass	Mathematics % pass	Citizenship % pass
Reading	1	14.3	41.7	0.0	7.1
	2	26.8	29.1	1.8	1.9
	3	46.0	48.9	5.3	16.3
	4	75.8	60.1	10.5	26.9
	5	92.0	72.7	24.3	50.0
	6	97.0	79.6	50.6	80.5
	7	98.4	84.1	71.9	95.3
	8	100.0	91.2	88.2	100.0
	9	100.0	95.0	100.0	100.0
Language	1	33.3	40.0		
	2	26.2	26.2		
	3	47.9	46.1		
	4	78.2	57.7		
	5	90.9	77.3		
	6	98.5	82.6		
	7	100.0	93.7		
	8	100.0	94.7		
	9	100.0	100.0		
Mathematics	1			0.0	
	2			0.0	
	3			4.2	
	4			8.5	
	5			19.0	
	6			59.3	
	7			92.7	
	8			96.7	
	9			100.0	

Table 5. EIGHTH GRADE ACHIEVEMENT TEST STANINE GROUPS AS INDICATORS OF SUCCESS ON OHIO PROFICIENCY SUBTESTS AFTER TWO PROFICIENCY TESTING SESSIONS

Groups based on reading stanine

Proficiency Subtest	Ohio Proficiency Subtest Pass Rate (%)		
	Group I*	Group II*	Group III*
Reading	40.1	86.7	99.2
Writing	44.0	69.3	88.0
Mathematics	4.3	24.9	81.4
Citizenship	12.7	47.7	97.5

Groups based on language stanine

Proficiency Subtest	Ohio Proficiency Subtest Pass Rate		
	Group I*	Group II*	Group III*
Reading	42.6	87.3	100.0
Writing	41.5	70.1	94.8

Groups based on mathematics stanine

Proficiency Subtest	Ohio Proficiency Subtest Pass Rate		
	Group I*	Group II*	Group III*
Mathematics	3.1	21.9	94.9

* Group I=Achievement Test Stanines 1, 2, 3
 Group II=Achievement Test Stanines 4, 5, 6
 Group III=Achievement Test Stanines 7, 8, 9

Third testing session

The majority of students who failed one or more proficiency subtests in November, 1990 and March, 1991 were retested during the third testing session in November, 1991. Students who passed a subtest on either the first, second or third attempt were considered to have passed that subtest.

After the third testing, passing rates for the four proficiency subtests were reading, 82.8%; writing, 78.4%; citizenship, 51.4%; mathematics, 31.9%. Less than 26% of the students passed all four subtests after three attempts.

Table 6 shows reading, writing, mathematics and citizenship proficiency test results after the third testing session for students in each reading stanine; reading and writing proficiency test results for students in each language stanine; mathematics proficiency test results for students in each mathematics stanine. As with the results of the second testing session, students in the lower stanines were somewhat successful in reading and writing, however, they had great difficulty with mathematics and citizenship. Students in the upper reading stanines remain less successful in writing and mathematics than they are in reading and citizenship.

Table 6 results were collapsed into 3 groups based on reading achievement scores: I (stanines 1-3), II (stanines 4-6), and III (stanines 7-9). See Table 7. Fifty-two percent of Group I students pass reading and 60% passed writing. The results are again noticeably different for the other two subtests: fewer than 19% of Group I students pass citizenship and fewer than 5% pass mathematics. When Groups I and II are combined, 80.7% of the students pass reading and 76.6% pass writing, but only 45.4% pass citizenship and only 25% pass mathematics.

When Table 6 results are collapsed into groups based upon language stanines, the reading and writing proficiency pass rates for Group I and the combined Group I and II are quite close to those based upon reading stanines. After three testing sessions, Group I results for mathematics remain considerably lower than Group I results for the other subtests.

The greatest increases in passing rate were found on the reading subtest for students in reading stanines 3 and 4, and on the writing subtest for students in language stanine 4.

Table 6. EIGHTH GRADE ACHIEVEMENT TESTS AS INDICATORS OF SUCCESS ON OHIO PROFICIENCY SUBTESTS AFTER THREE PROFICIENCY TESTING SESSIONS

Achievement Test		Ohio Proficiency Subtest			
	Stanine	Reading % pass	Writing % pass	Mathematics % pass	Citizenship % pass
Reading	1	28.6	50.0	0.0	14.3
	2	32.1	43.6	1.8	3.7
	3	59.9	65.9	5.9	23.4
	4	84.3	76.5	15.4	34.6
	5	95.4	84.0	33.2	60.7
	6	98.2	90.7	61.6	83.5
	7	98.4	95.2	81.3	96.9
	8	100.0	94.1	88.2	100.0
	9	100.0	95.0	100.0	100.0
Language	1	66.7	60.0		
	2	32.3	41.0		
	3	60.7	60.2		
	4	85.6	76.7		
	5	95.7	89.8		
	6	99.3	90.6		
	7	100.0	100.0		
	8	100.0	97.4		
	9	100.0	100.0		
Mathematics	1			0.0	
	2			4.2	
	3			7.5	
	4			11.5	
	5			28.2	
	6			71.7	
	7			96.3	
	8			100.0	
	9			100.0	

Table 7. EIGHTH GRADE ACHIEVEMENT TEST STANINE GROUPS AS INDICATORS OF SUCCESS ON OHIO PROFICIENCY SUBTESTS AFTER THREE PROFICIENCY TESTING SESSIONS

Groups based on reading

Proficiency Subtest	Ohio Proficiency Subtest Pass Rate (%)		
	Group I*	Group II*	Group III*
Reading	52.1	91.5	99.2
Writing	60.1	82.5	94.9
Mathematics	4.7	32.6	86.4
Citizenship	18.7	55.4	98.3

Groups based on language stanine

Proficiency Subtest	Ohio Proficiency Subtest Pass Rate		
	Group I*	Group II*	Group III*
Reading	54.3	92.0	100.0
Writing	55.9	84.3	99.1

Groups based on mathematics stanine

Proficiency Subtest	Ohio Proficiency Subtest Pass Rate		
	Group I*	Group II*	Group III*
Mathematics	6.6	29.1	97.8

- * Group I=Achievement Test Stanines 1, 2, 3
 Group II=Achievement Test Stanines 4, 5, 6
 Group III=Achievement Test Stanines 7, 8, 9

Relationships among achievement test indicators and proficiency subtests

First testing session correlations between each of the indicators (reading, language and mathematics achievement test scores) and the proficiency subtests are shown in Table 8. Both reading and language achievement scores are highly correlated with the reading, citizenship and mathematics proficiency subtest scores. When reading achievement is broken down into vocabulary and comprehension, both of these subtests are equally associated with the mathematics and citizenship proficiency subtests. However, comprehension is more strongly associated with the reading proficiency test than is vocabulary. The writing proficiency subtest is only slightly more correlated with language than it is with reading and mathematics.

Table 8. CORRELATIONS OF ACHIEVEMENT AND PROFICIENCY TESTS AFTER THE FIRST TESTING SESSION

<u>Achievement Test</u>	<u>Reading</u>	<u>Writing</u>	<u>Mathematics</u>	<u>Citizenship</u>
Reading	.53**	.30**	.54**	.60**
Language	.53**	.37**	.55**	.56**
Mathematics	.45**	.31**	.62**	.53**

** $p < .001$

Second testing session correlations between each of the indicators (reading, language and mathematics achievement test scores) and their associated proficiency subtests are shown in Table 9. As with the first testing session, both reading and language achievement scores are highly correlated with the citizenship and mathematics proficiency subtest scores. When reading achievement is broken down into vocabulary and comprehension, both of these subtests remain equally associated with the mathematics and citizenship proficiency tests. Again, comprehension is more strongly associated with the reading proficiency test than is vocabulary. The writing proficiency subtest correlations changed very little from the first proficiency test administration.

Third testing session correlations between each of the indicators (reading, language and mathematics achievement test scores) and their associated proficiency tests are shown in Table 10. Both reading and language achievement scores are highly correlated with the citizenship and mathematics proficiency subtest scores. Correlations between the reading achievement scores and the reading proficiency subtest are not as

Table 9. CORRELATIONS OF ACHIEVEMENT AND PROFICIENCY TESTS
AFTER THE SECOND TESTING SESSION

<u>Achievement Test</u>	<u>Reading</u>	<u>Writing</u>	<u>Mathematics</u>	<u>Citizenship</u>
Reading	.49**	.31**	.55**	.58**
Language	.47**	.38**	.58**	.55**
Mathematics	.40**	.31**	.66**	.52**

** $p < .001$

high as might be expected because many students in the lower reading achievement stanines are passing the reading proficiency subtest. The writing proficiency subtest is only slightly more correlated with language than it is with reading and mathematics. It is puzzling that the correlations between the writing subtest and each of the achievement tests are not higher. This calls into question the reliability of the holistic scoring process used for the writing subtest.

Table 10. CORRELATIONS OF ACHIEVEMENT AND PROFICIENCY TESTS
AFTER THE THIRD TESTING SESSION

<u>Achievement Test</u>	<u>Reading</u>	<u>Writing</u>	<u>Mathematics</u>	<u>Citizenship</u>
Reading	.43**	.28**	.56**	.54**
Language	.42**	.34**	.59**	.52**
Mathematics	.36**	.29**	.65**	.49**

** $p < .001$

Discussion

As expected, the mathematics achievement test scores were associated with mathematics proficiency test scores. The concepts and applications section of the achievement test were much more strongly associated with the mathematics proficiency test than the computation section. This supports the intent that the mathematics proficiency test measure thinking skills and problem-solving. The citizenship proficiency subtest was highly correlated with reading, language and mathematics achievement. It has been suggested that the citizenship test is more of a reading and logic test since traditionally citizenship is not emphasized in the curriculum until grade 11.

However, three concerns became more pronounced when the proficiency test results were compared to the standardized test results. First, the mathematics proficiency subtest is far more difficult than the reading based on a) the percentage of students who passed after three attempts, and b) the percentage of students who were average or above on the standardized test but failed the math proficiency test.

A second concern was the low correlations between the writing proficiency test and the reading and language achievement tests (less than .40). Although it may be argued that writing is an independent process, the reliability of the holistic scoring process should be investigated.

A third and major concern is the fact that no test statistics have been made available, specifically, item difficulty levels, item-to-item correlations, interrater reliability, item bias, test reliability.... Further, the holistic scoring appears to be a problem. Cases have been reported where honor students did not pass the writing subtest.

While the relationships between the standardized test and the proficiency tests are not strong enough to substitute the standardized test for the proficiency, the standardized test scores could be used to identify students who need additional preparation for the proficiency test, possibly in the summer before the first administration of the ninth-grade proficiency test. The correlations between the reading and mathematics standardized tests and the same subject proficiency subtests were high but not high enough to justify the original intent - replacing the proficiency test with the standardized test.